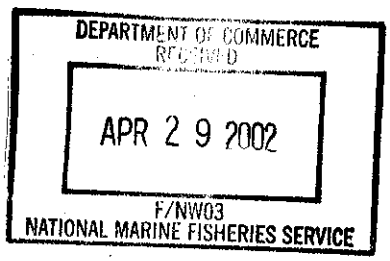
BY U.S. MAIL

April 25, 2002



Mr. D. Robert Lohn
Regional Administrator
Northwest Region
National Marine Fisheries Service
7600 Sandpoint Way
Seattle, WA 98115

Mr. Rodney McInnis
(Acting) Regional Administrator
Southwest Region
National Marine Fisheries Service
501 West Ocean Boulevard, Suite 4200
Long Beach, CA 90802-4213

RE: Petitions to list 14 wild West Coast salmon and steelhead ESUs

Dear Administrators Lohn and McInnis:

The enclosed document is being formally submitted as a petition to define the Puget Sound, Upper Willamette River, Snake River spring/summer, Snake River fall, Upper Columbia River spring and Lower Columbia River Chinook ESUs, Hood Canal summer and Columbia River Chum ESUs, Southern Oregon/Northern California Coast Coho ESUs, and the Upper Willamette River, Snake River, Middle Columbia River, Upper Columbia River and Lower Columbia River steelhead as including only wild stocks, specifically excluding all hatchery stocks, and consequently listing the wild stocks as threatened or endangered under the Endangered Species Act.

The Petition clearly demonstrates that hatchery stocks should not be included with wild stocks pursuant to the current definitions of both "evolutionarily significant unit" (ESU) and "distinct population segment" (DPS). The best scientific evidence supports findings that each of the wild ESUs are presently in danger of extinction or will likely become endangered in the foreseeable future.

On February 11, 2002, the National Marine Fisheries Service (NMFS) accepted for consideration five petitions to delist 14 West Coast salmon and steelhead ESUs that contain hatchery populations. In a letter to me dated February 11, 2002, Mr. Lohn expressly denied that the species are extinct, recovered, or that the data utilized in the original listing decision were in error (notably, the only three reasons legally allowed to justify acceptance of a delisting petition). Instead, NMFS relied on the decision in *Alsea Valley Alliance v. Evans*, 161 F.Supp. 2nd 1154 (D.Or., Sept. 10, 2001), ("*Alsea* decision") to support a justification that the delisting petitions presented substantial scientific and commercial information to possibly warrant a revision. Such a conclusion overlooks the language of the regulations that requires that the scientific and commercial

information "*at the time of the listing...[be] in error*"– a point which neither the court nor the delisting petitions suggested, and in fact the agency has expressly denied.

Regardless of the inadequacy of the accepted delisting petitions, or that the *Alsea* decision is being appealed and has been stayed pending that appeal, the *Alsea* decision presented another option to the agency. Judge Hogan's opinion stated that NMFS could have defined an ESU based solely on wild stocks. The Petition squarely places this option before the agency by presenting evidence that not only is it possible, but that defining and listing these 14 ESUs as solely wild is the only legally and biologically sound action the agency can now take under the Endangered Species Act.

As I am sure you will note, the Petition mirrors the new relaxed standard implemented by NMFS when it accepted the vacuous delisting petitions. However, when read together with the Oregon Coast coho petition it becomes abundantly clear that the Petition presents far more information than NMFS required even before lowering its standards to accept the delisting petitions. Furthermore, the abundant information in this Petition directly refutes any specious arguments raised in the delisting petitions.

Notably, websites and/or hard copies of pertinent references to be considered, as with all references, as part of the record will be mailed to you separately within the week. We look forward to your response within 90 days from today. If you have any questions about the arguments or data presented in these petitions, of if I can be of any further assistance, please do not hesitate to contact me or any of my colleagues.

Respectfully submitted,

Kaitlin L. Lovell

Kaitlin L. Lovell

on behalf of:

Ric Abbett, President, Washington Council of Trout Unlimited
Bill M. Bakke, Director, Native Fish Society
Kurt Beardslee, Executive Director, Washington Trout
Thomas Gilg, Vice President of Conservation, Oregon Council of the Federation of Fly Fishers
Jan Hassleman, Counsel, National Wildlife Federation Northwestern Natural Resource Center
Doug Heiken, Wildland Advocate, Oregon Natural Resources Council
Ken Retallic, President, Idaho Council of Trout Unlimited
Joe Whitworth, Executive Director, Oregon Trout
Tom Wolf, Chairman, President, Oregon Council of Trout Unlimited

ENCLOSURES

cc:

Secretary Don Evans, Dept. of Commerce
Dr. William Hogarth, Assistant Administrator for Fisheries, NOAA
Mr. Donald Knowles, Director, Office of Protected Resources, NMFS
Dr. Usha Varanasi, Director, Northwest Science Center, NMFS
Governor John Kitzhaber, M.D.
Senator Gordon Smith
Senator Ron Wyden
Representative Peter DeFazio
Representative Darlene Hooley
Representative David Wu
Mr. John Esler, Oregon Department of Fish and Game Commission Chair

PETITION TO LIST FOURTEEN SALMON AND STEELHEAD AS A THREATENED AND ENDANGERED SPECIES UNDER THE FEDERAL ENDANGERED SPECIES ACT

April 25, 2002

Photograph used with permission of photographer, Kaitlin Lovell

Acknowledgements

The Petitioners would like to thank Daniel Rohlf, Esq., the Director of the Pacific Environmental Advocacy Center, Patti Goldman, Esq., Managing Attorney at Earthjustice Legal Defense Fund, and Dr. Richard Williams of Clear Creek Genetics for their reviews and contributions to this Petition.

PETITION

I. INTRODUCTION

A. Petition

Petitioners hereby request that the National Marine Fisheries Service (NMFS) list all wild Spring- and Summer-Run Chinook in the Snake River, all wild Fall-Run Chinook in the Snake River, all wild Puget Sound Chinook, all wild Lower Columbia River Chinook, all wild Upper Willamette River Chinook, all wild Chinook in the Upper Columbia River, all wild Southern Oregon/Northern California Coho, all wild Columbia River Chum, all wild Hood Canal Summer-run Chum, all wild Upper Columbia River Steelhead, all wild Snake River Basin Steelhead, all wild Lower Columbia River Steelhead, all wild Upper Willamette River Steelhead, and all wild Mid-Columbia River Steelhead as threatened or endangered under the federal Endangered Species Act, 16 U.S.C. Sec. 1533 ("ESA").

The definition of wild only stocks as a "species" and this petition are warranted because the ESA and NMFS' own policies emphasize 1) the need to protect wild fish, and 2) hatchery fish are partly responsible for the continual demise of wild salmonids. This petition is necessary because these species have been historically, and are presently, threatened by the destruction and modification of their habitat due to logging activities, agricultural impacts, urbanization, dam construction and operation, stream diversion, stream channelization, stream withdrawals, wetland loss, and mining activities. Additional pressures to the survival of these species include overharvest by commercial and recreational consumers, the failure of mandatory and voluntary regulatory mechanisms in the recovery of these species, poor atmospheric and marine conditions, and finally predation, competition, and genetic disruption from the continued introductions of hatchery fish.

This petition satisfies the requirements in the Code of Federal Regulations (50 CFR 424.14), unlike the delisting petitions recently submitted and, subsequently, accepted by NMFS. Section II of this petition defines the specific stocks petitioned, Section III explores the historic and current population status by incorporating the NMFS biological status reviews and providing updated information where available, and Section IV identifies the on-going threats to these stocks that justify the listings as either threatened or endangered under the ESA.

B. Petitioners

The Petitioners vary by stock. A detailed description of the individual petitioners, with the exception of the Idaho Council of Trout Unlimited, can be found in the Oregon Coast Coho petition submitted concurrently herewith, and for the sake of brevity, is incorporated by reference into this Petition. The Idaho Council of Trout Unlimited, like the other Trout Unlimited State Councils, is deeply involved in the habitat restoration and recovery of the Snake River salmon currently protected by the ESA.

1. WILD PUGET SOUND CHINOOK

Trout Unlimited, Washington Council of Trout Unlimited, Oregon Trout, Washington Trout, Native Fish Society, Oregon Council of the Federation of Fly Fishers, National Wildlife Federation and Siskiyou Regional Education Project petition to list the wild stocks of Puget Sound Chinook as threatened under the Endangered Species Act.

2. WILD LOWER COLUMBIA RIVER CHINOOK

Trout Unlimited, Washington Council of Trout Unlimited, Oregon Council of Trout Unlimited, Oregon Trout, Washington Trout, Native Fish Society, Oregon Council of the Federation of Fly Fishers, Oregon Natural Resources Council, National Wildlife Federation and Siskiyou Regional Education Project petition to list the wild stocks of Puget Sound Chinook as threatened under the Endangered Species Act.

3. WILD UPPER WILLAMETTE RIVER SPRING CHINOOK

Trout Unlimited, Washington Council of Trout Unlimited, Oregon Council of Trout Unlimited, Oregon Trout, Washington Trout, Native Fish Society, Oregon Council of the Federation of Fly Fishers, Oregon Natural Resources Council, National Wildlife Federation and Siskiyou Regional Education Project petition to list the wild stocks of Puget Sound Chinook as threatened under the Endangered Species Act.

4. WILD UPPER COLUMBIA RIVER SPRING CHINOOK

Trout Unlimited, Washington Council of Trout Unlimited, Oregon Council of Trout Unlimited, Oregon Trout, Washington Trout, Native Fish Society, Oregon Council of the Federation of Fly Fishers, Oregon Natural Resources Council, National Wildlife Federation and Siskiyou Regional Education Project petition to list the wild stocks of Puget Sound Chinook as endangered under the Endangered Species Act.

5. WILD SNAKE RIVER FALL CHINOOK

Trout Unlimited, Idaho Council of Trout Unlimited, Washington Council of Trout Unlimited, Oregon Council of Trout Unlimited, Oregon Trout, Washington Trout, Native Fish Society, Oregon Council of the Federation of Fly Fishers, Oregon Natural Resources Council, National Wildlife Federation and Siskiyou Regional Education Project petition to list the wild stocks of Puget Sound Chinook as threatened under the Endangered Species Act.

6. WILD SNAKE RIVER SPRING/SUMMER RUN CHINOOK

Trout Unlimited, Idaho Council of Trout Unlimited, Washington Council of Trout Unlimited, Oregon Council of Trout Unlimited, Oregon Trout, Washington Trout, Native Fish Society, Oregon Council of the Federation of Fly Fishers, Oregon Natural Resources Council, National Wildlife Federation and Siskiyou Regional Education Project petition

to list the wild stocks of Puget Sound Chinook as threatened under the Endangered Species Act.

7. WILD SOUTHERN OREGON/ NORTHERN CALIFORNIA COAST COHO

Trout Unlimited, Oregon Council of Trout Unlimited, Oregon Trout, Washington Trout, Native Fish Society, Oregon Council of the Federation of Fly Fishers, Oregon Natural Resources Council, National Wildlife Federation and Siskiyou Regional Education Project petition to list the wild stocks of Puget Sound Chinook as threatened under the Endangered Species Act.

8. WILD COLUMBIA RIVER CHUM

Trout Unlimited, Washington Council of Trout Unlimited, Oregon Council of Trout Unlimited, Oregon Trout, Washington Trout, Native Fish Society, Oregon Council of the Federation of Fly Fishers, Oregon Natural Resources Council, National Wildlife Federation and Siskiyou Regional Education Project petition to list the wild stocks of Puget Sound Chinook as threatened under the Endangered Species Act.

9. WILD HOOD CANAL SUMMER-RUN CHUM

Trout Unlimited, Washington Council of Trout Unlimited, Oregon Trout, Washington Trout, Native Fish Society, Oregon Council of the Federation of Fly Fishers, National Wildlife Federation and Siskiyou Regional Education Project petition to list the wild stocks of Puget Sound Chinook as threatened under the Endangered Species Act.

10. WILD UPPER COLUMBIA RIVER STEELHEAD

Trout Unlimited, Washington Council of Trout Unlimited, Oregon Council of Trout Unlimited, Oregon Trout, Washington Trout, Native Fish Society, Oregon Council of the Federation of Fly Fishers, Oregon Natural Resources Council, National Wildlife Federation and Siskiyou Regional Education Project petition to list the wild stocks of Puget Sound Chinook as endangered under the Endangered Species Act.

11. WILD SNAKE RIVER BASIN STEELHEAD

Trout Unlimited, Idaho Council of Trout Unlimited, Washington Council of Trout Unlimited, Oregon Council of Trout Unlimited, Oregon Trout, Washington Trout, Native Fish Society, Oregon Council of the Federation of Fly Fishers, Oregon Natural Resources Council, National Wildlife Federation and Siskiyou Regional Education Project petition to list the wild stocks of Puget Sound Chinook as threatened under the Endangered Species Act.

12. WILD LOWER COLUMBIA RIVER STEELHEAD

Trout Unlimited, Washington Council of Trout Unlimited, Oregon Council of Trout Unlimited, Oregon Trout, Washington Trout, Native Fish Society, Oregon Council of the Federation of Fly Fishers, Oregon Natural Resources Council, National Wildlife

Federation and Siskiyou Regional Education Project petition to list the wild stocks of Puget Sound Chinook as threatened under the Endangered Species Act.

13. WILD UPPER WILLAMETTE RIVER STEELHEAD

Trout Unlimited, Washington Council of Trout Unlimited, Oregon Council of Trout Unlimited, Oregon Trout, Washington Trout, Native Fish Society, Oregon Council of the Federation of Fly Fishers, Oregon Natural Resources Council, National Wildlife Federation and Siskiyou Regional Education Project petition to list the wild stocks of Puget Sound Chinook as threatened under the Endangered Species Act.

14. WILD MID-COLUMBIA RIVER STEELHEAD

Trout Unlimited, Washington Council of Trout Unlimited, Oregon Council of Trout Unlimited, Oregon Trout, Washington Trout, Native Fish Society, Oregon Council of the Federation of Fly Fishers, Oregon Natural Resources Council, National Wildlife Federation and Siskiyou Regional Education Project petition to list the wild stocks of Puget Sound Chinook as threatened under the Endangered Species Act.

C. Limiting the Definition of "Species"

The Endangered Species Act, 16 U.S.C. Sec.5131 *et. seq.*, as amended, authorizes NMFS and the U.S. Fish and Wildlife Service (FWS) to list as threatened or endangered those "species" facing threats to their existence. The statute defines the term "species" to include subspecies, as well as "any distinct population segment of any species of vertebrate fish or wildlife which interbreeds when mature." 16 U.S.C. 1532(15) (2001).

Since the phrase "distinct population segment" (DPS) is not one ordinarily employed by biologists, its meaning is not readily apparent from the ESA's language. NMFS embraced its discretion in order to define a DPS with regards to anadromous West Coast salmonids as an "evolutionarily significant unit" (ESU) while establishing another DPS Policy for other species. This Petition asks NMFS, pursuant to the ESA and NMFS' own ESU and DPS Policies, to list "species" of salmon and steelhead as consisting of only the wild fish in the 14 ESUs listed above. The Petition is consistent and supported by the decision of *Alsea Valley Alliance v. Evans*, 161 F.Supp.2nd 1154 (D.Or., Sept. 2001), and is not inconsistent with the appeal of that case. A detailed explanation of these conclusions is found in Section III.B. of the Oregon Coast Coho petition and is incorporated into this petition in its entirety. To the extent that Section III.B. of the Oregon Coast Coho petition addresses Oregon Coast Coho specifically, many of the same differences between wild and hatchery stocks are found in these fourteen petitioned stocks. Specific population differences and species traits, as they apply to the DPS and ESU requirements, can be found in the individual status reviews (Matthews and Waples 1991; Waples *et al.* 1991; Weitkamp *et al.* 1995; Busby *et al.* 1996; Johnson *et al.* 1997; Myers *et al.* 1998) as well as additional, updated information provided later in this Petition.

II. SPECIES DESCRIPTIONS

A. Chinook Generally

Chinook (*Oncorhynchus tshawytscha*) are one of eight species of anadromous salmonids that inhabit the Pacific Ocean. The species distribution historically ranged from the Ventura River in California to Point Hope, Alaska in North America and in northeastern Asia from Hokkaido, Japan to the Anadar River in Russia (Healy 1991).

1. WILD PUGET SOUND CHINOOK

Wild Puget Sound Chinook inhabit the Puget Sound region from the North Fork Nooksack River to the Elwha River on the Olympic Peninsula and include the Nooksack River, Samish River, Skagit River, Stillaguamish River, Snohomish River, Duwamish/Green River, Puyallup River, Nisqually River, Skokomish River, SE Hood Canal, Hamma Hamma River, Duckabush River, Dosewalips River, Dungeness River, and Elwha River Basins. These fish exhibit an ocean-type life history. (Myers *et al.* 1998).

2. WILD LOWER COLUMBIA RIVER CHINOOK

Wild Lower Columbia River Chinook inhabit the Columbia River tributaries from the mouth to, but not including, the Klickitat River and include all fall and spring run fish, with the exception of spring-run chinook in the Willamette River above Willamette Falls. (Myers *et al.* 1998).

3. WILD UPPER WILLAMETTE RIVER SPRING CHINOOK

Wild Upper Willamette River Spring Chinook inhabit the Willamette basin above Willamette Falls and includes the Molalla River, Santiam River, McKenzie River, and Fall Creek River Basins. These fish exhibit an ocean-type life history. (Myers *et al.* 1998).

4. WILD UPPER COLUMBIA RIVER SPRING CHINOOK

Wild Upper Columbia River Spring Chinook include all stream-type chinook salmon spawning above the Rock Island Dam, including the Wenatchee, Entiat, and the Methow River Basins. These fish exhibit a stream-type life history. (Myers et al. 1998).

5. WILD SNAKE RIVER FALL CHINOOK

Wild Snake River Fall Chinook incorporates all wild populations of fall-run Chinook in the Columbia River and its tributaries between the Dalles Dam and the Snake River, including the Snake River. Major subbasins where there are Wild Snake River

Fall Chinook present are in the Deschutes, John Day, Tucannon, Grand Ronde, Imnaha, Salmon and Clearwater Rivers. (Myers *et al.* 1998; WCChBRT 1999).

6. WILD SNAKE RIVER SPRING-RUN AND SUMMER-RUN CHINOOK

Wild Snake River Spring-run and Summer-run Chinook incorporates all wild populations of spring/summer Chinook in the mainstem of the Snake River and includes stocks from the Tucannon, Grande Ronde, Imnaha and Salmon Rivers and their tributaries. (Myers *et al.* 1998).

B. Coho Generally

Coho salmon (*Oncorhynchus kisutch*) are one of eight species of anadromous salmonids that inhabit the Pacific Ocean. The species distribution historically ranged from central California north to Point Hope, Alaska west through the Aleutian Islands to the Anadyr River in Russia, and then south to Hokkaido, Japan. (62 Fed. Reg. 24588).

1. WILD SOUTHERN OREGON/NORTHERN CALIFORNIA COAST COHO

Wild Southern Oregon/Northern California Coast Coho is generally found in the Oregon and California coastal drainages north of Punta Gorda, California and south of Cape Blanco, Oregon. (60 Fed. Reg. 38011 (July 25, 1995), 62 Fed. Reg. 24588 (May 6, 1997)).

C. Chum Generally

Chum salmon (*Oncorhynchus keta*) are one of eight species of anadromous salmonids that inhabit the Pacific Ocean. The species distribution is the widest of Pacific salmonids and historically ranged from Korea and the Japanese island of Honshu, east, around the rim of the North Pacific Ocean, to Montery Bay in southern California. The species' range in the Arctic ocean extends from the Laptev Sea to the Mackenzie River in Canada (Johnson *et al.* 1997).

1. WILD COLUMBIA RIVER CHUM

The Columbia River Chum ESU is based mainly on historical information. The only known populations of Columbia River Chum are in Grays River, Hardy Creek and Hamilton Creek in Southern Washington. (Johnson *et al.* 1997).

2. WILD HOOD CANAL SUMMER-RUN CHUM

Hood Canal Summer-run Chum represent a unique ESU within the Puget Sound area. Specifically, the ESU encompasses all chum naturally spawning between mid-September to mid-October in Hood Canal, Washington; Discovery and Sequim Bays in the Strait of Juan de Fuca, Washington, and Dungeness River, Washington. (Johnson *et*

al. 1997; 63 Fed. Reg. 11774 (Mar. 10, 1998); NMFS 1999). There is distinctive and strong genetic and temporal separation between Hood Canal Summer-run Chum and other chum ESUs. (*Id.*).

D. Steelhead

Steelhead (*Oncorhynchus mykiss*) are one of eight species of anadromous salmonids that inhabit the Pacific Ocean. The species distribution is from southern California north to Alaska and west to Kamchatka, Russia. (Busby *et al.* 1996).

1. Wild Upper Columbia River Steelhead

Wild Upper Columbia River Steelhead inhabit the Columbia River Basin upstream from above the Yakima river and include the Wenatchee, Entiat, Methow, and Okanogan River Basins. These stocks are composed entirely of summer-run steelhead. (Busby *et al.* 1996).

2. Wild Snake River Basin Steelhead

Wild Snake River Steelhead includes all wild populations of Steelhead in the Snake River Basin of southeast Washington, northwest Oregon, and Idaho. This population includes A- and B-run Steelhead, distinguishable based on migration, ocean age, and adult size, with A-run representing one-ocean cycle and B-run representing two ocean cycles. Snake River Steelhead represent the highest elevation of spawning and the longest migrations from the ocean of any steelhead species. (Busby *et al.* 1996; WCSBRT, 1997; 62 Fed. Reg. 43937, Aug. 18, 1997). The wild population includes resident populations of native *O. mykiss* above the Hells Canyon dam complex with ancestral linkage to anadromous steelhead.

3. Wild Upper Willamette River Steelhead

Wild Upper Willamette River Steelhead inhabit the Willamette River and its tributaries upstream of Willamette Falls and include the Tualatin River, Molalla River, Yamhill River, Rickerall Creek, Luckiamute River, Santiam River, Calapooia River and Willamette River Basins. These stocks are composed entirely of winter-run steelhead. (Busby *et al.* 1996).

4. Wild Mid-Columbia River Steelhead

Wild Mid-Columbia River Steelhead inhabit the Columbia River Basin from above the Wind River in Washington and Hood River in Oregon upstream to include the Yakima River in Washington. Also included are steelhead in Mosier Creek, Chenowith Creek, Mill Creek, Fifteen Mile Creek, Deschutes River, John Day River, Umatilla River and Walla Walla River Basins in Oregon and White Salmon River, Klickatat River, Rock Creek and Yakima River Basins in Washington. These stocks are composed of both winter and summer-run steelhead. (Busby *et al.* 1996).

5. WILD LOWER COLUMBIA RIVER STEELHEAD

Wild Lower Columbia River Steelhead inhabit the Columbia River Basin from the Cowlitz River to the Wind River in Washington and from the Willamette River, upstream to Willamette Falls, to the Hood River in Oregon. These stocks are composed of both winter and summer-run steelhead. (Busby *et al.* 1996).

III. POPULATION TRENDS

A. Chinook Salmon

1. WILD UPPER WILLAMETTE RIVER SPRING CHINOOK

Historic abundance is well summarized in NMFS' own status review. "Long-term trends of escapement are mixed, ranging from slightly upward to moderately downward . . . Short-term trends are all strongly downward. . . it is apparent that at present production and harvest levels the natural population is not replacing itself." (Myers *et al.* 1998, at 228). The major habitat for wild Upper Willamette River Spring Chinook exists in the North Santiam, Clackamas, McKenzie, South Santiam, Middle Fork of the Willamette and Mollala Rivers. (ODFW 2001c). However, researchers believe that the wild populations in the South Santiam, Middle Fork of the Willamette, Mollala, and possibly the North Santiam Rivers may be extinct. (*Id.*).

The Oregon Department of Fish and Wildlife (ODFW) describes the McKenzie and Clackamas River populations as the only two improving populations, representing less than 30% of the historical habitat and production. Recently "[t]he Clackamas and McKenzie wild populations appear to exceed critical and interim viability thresholds for abundance and productivity during recent years." (ODFW 2001c). In the McKenzie, "[s]ince 1994, counts have ranged from 1,176 to an expected 2,700 in 2000. Leaburg counts of wild fish have increased from 825 to over 2,000 from 1994 to 2000 with a steadily increasing trend. Over that period, wild percentages in the Leaburg escapement have increased from 54% to 70-80%." (*Id.*). Nonetheless, ODFW cautions, "[n]o quantitative estimates of wild productivity can be derived from historic data because of the confounding effects of hatchery outplants. However, the increasing trend in wild numbers suggests that this population may be reproducing at a rate greater than replacement." (*Id.*). Trends of wild spawners in the Clackamas cannot be completely distinguished until 2002 because of the lack of marking of hatchery fish and thus trend data is unreliable. (*Id.*).

The positive trend in the McKenzie River is counteracted by negative trends in other important chinook habitat. For example, ODFW concluded that:

> Recent wild spawning escapements in the North Santiam River likely do not meet critical and viable thresholds for abundance and productivity and will continue to fall short regardless of fishery management actions. Over

> 70% of the historic spawning area for spring chinook in the North Santiam basin was blocked by Detroit and Big Cliff dams since 1953. The remaining habitat is adversely affected by warm water and flow regulation. It is unclear if a self-sustaining natural run of spring chinook remains in the North Santiam system or if spawners consist solely of stray hatchery fish. The NMFS notes that blockage of the North Santiam by Detroit Dam greatly limits the immediate prospects for recovery in this system. It is unclear if natural runs remain in the other rivers which historically produced spring Chinook within the ESU (i.e. Middle Fork Willamette, South Santiam, and Molalla Rivers). (ODFW 2001c) (internal citations omitted).

In 2000, NMFS concluded that of the 4,000 natural spawners in the Upper Willamette Chinook population, 2600 are of hatchery origin. (FCRPS 2000). Citing a 1998 ODFW report, NMFS also concluded that the McKenzie River supported the only naturally reproducing population of this species and that hatchery fish represent over 90% of the escapement. (*Id.*). As a consequence of this high presence of hatchery fish, it is unlikely that wild chinook are self-sustaining. (NWPPC 2001a). The minimal relative abundance of wild fish is reiterated in recent ODFW reports: "The percentage of wild fish in the present Willamette Spring Chinook runs is unknown, but best estimates put it at 5-15% of the run." (Foster 2001 at 42).

The dependence on two populations for the recovery of a species does not meet NMFS' special structure and diversity requirements for a viable population. Indeed, it was precisely because there were only two relatively stable populations within the ESU that NMFS considered the stock threatened. (*Id.*). There is been no new evidence to suggest that the North Santiam population, or any other wild population, are meeting their abundance or productivity viability needs. As a consequence, the wild species as a whole remains threatened.

2. WILD LOWER COLUMBIA RIVER CHINOOK

The NMFS Status Review for lower Columbia Chinook recognizes that there are "no estimates of historic abundance for this ESU, but there is widespread agreement that natural production has been substantially reduced over the last century..." (NMFS 1998). The status review further acknowledges that short-term trends for both fall and spring chinook are "more negative."

Currently, most of the wild fall-run Lower Columbia River Chinook are found in the Lewis River system with smaller populations in the Sandy and Cowlitz Rivers. (ODFW/WDFW 2001). Between 1990 and 2000, the wild fall-run of Lower Columbia River Chinook has averaged 13,000 adult returns, with 10,200 returning in 2000, and between 15,000 and 18,000 estimated in 2001. (*Id.*; ODFW 2001b). The recent returns are within the historical average, an average that NMFS concluded would threaten the survival of the species. (Myers *et al.* 1998).

With regards to wild spring-run Lower Columbia River Chinook, ODFW has not been able to estimate the number of wild Chinook returning to the Sandy River. (ODFW/WDFW 2001). Willamette River Chinook were introduced into the system in 1976, and their releases have steadily increased. (*Id.*). The combined total number of Chinook entering the Sandy ranges between 4,000-5,600 returning adults. (*Id.*). Based on the extensive hatchery releases, it is an educated presumption that many of these returning adults are not wild Lower Columbia River Chinook.

Spring-run Lower Columbia River Chinook also return to the Cowlitz, Kalama, and Lewis Rivers in Washington, however it is unlikely that there are any truly wild (no known hatchery influence) spring chinook returning to these systems. An average of 300 hatchery chinook are permitted to spawn naturally in the Cowlitz River (average based from 1994-2001), 800 hatchery chinook are allowed to spawn naturally in the Kalama, and 600 hatchery chinook are allowed to spawn naturally in the Lewis River. (ODFW/WDFW 2001). The returns of these spring-run Lower Columbia River Chinook are well within the ten-year averages, which represent the lowest returns and greatest declines on record. (*Id.*). However, because many of these spawners are of hatchery origin the original genetic legacy of this population may be significantly impaired or lost.

3. Wild Upper Columbia River Spring Chinook

NMFS documents the population trends in their status review (Myers *et al.* 1998) and describe the trend data available for ten populations as, "mostly downward... with eight populations exhibiting rates of decline exceeding 20% per year...." (*Id.*). No population within this group averages more than 150 adults in recent years. (*Id.*). Indeed, in 2000, NMFS refined that information concluding that at least six former populations within the ESU are extinct and the remaining populations generally have fewer than 100 wild spawners. (FCRPS 2000). As a consequence NMFS estimates a high probability of extinction (greater than 50%) within the next 100 years. (*Id.*).

4. Wild Puget Sound Chinook

The total abundance of Puget Sound Chinook exhibits predominantly downward trends in both the short- and long-term, with some populations within this grouping exhibiting severe short-term declines. (Myers *et al.* 1998). The BRT has expressed concerns that artificial production may be masking trends in natural populations and it is difficult to evaluate the self-sustainability of natural populations. (*Id.*).

Of the 28 stocks identified in this ESU, WDFW identified 13 that are of native origin and predominantly reproduce through natural production. A majority of these native stocks were either depressed or critical; specifically, the BRT identified only two healthy stocks, five depressed stocks, two critical stocks, and four whose status was unknown. (WDFW *et al.* 1993).

The report of the Salmon Technical Team of the Pacific Fishery Management Council reinforces the evidence of both short and long-term declines. "Natural stocks from Puget Sound have experienced poor survival in recent years, resulting in depressed production and escapements." (PFMC 2002 at II-21). In the best interpretation of the data, only four natural Puget Sound summer/fall chinook stocks have met escapement goals at least once in the years 1997-2002. Unfortunately, the data from two of these wild stocks is masked by "significant numbers of hatchery chinook that stray into natural spawning areas and are counted as natural fish," obscuring the decline of wild fish. (*Id.*)

Moreover, the hatchery threat to these fish only continues to increase. 2002 hatchery returns are predicted to increase by 25% over 2001 hatchery returns, further swamping the natural ability of wild fish to recover. Specific ratios of hatchery and wild fish returns are referenced in the PFMC's report.

5. WILD SNAKE RIVER SPRING- AND SUMMER- CHINOOK

The Snake River Spring- and Summer-Run Chinook has been extensively studied by the federal government, the states of Idaho, Washington and Oregon, and by numerous individual scientists and organizations. The most complete historical information on the species can be found in those reports. (Matthews and Waples 199l; 56 Fed. Reg. 29542, June 27, 1991; 57 Fed. Reg. 14653, Apr. 22, 1992; WDFW 1993; 59 Fed. Reg. 42529, Aug. 18, 1994; 59 Fed. Reg. 66784, Dec. 28, 1994; IDFG 1998; Myers *et al.* 1998). The overwhelming conclusion of all of the reports is that the Snake River Chinook (Spring-, Summer- and Fall-run) are in precipitous decline due mainly in part to the daming of the Snake and Columbia Rivers.

The Snake River basin is the primary spawning ground for Spring- and Summer-Run Chinook. Unfortunately that spawning ground remains inaccessible due to the Lower Snake River hydrosystem four-dam complex. In 1998, NMFS estimated the Snake River population to average 2,500 fish although historical levels were around 1.5 million fish. (Myers *et al.* 1998). According to the Fish Passage Center, in 2000, Spring-Run Chinook including hatchery and wild Chinook passing over Lower Granite Dam numbered around 45,000 (including jacks), while combined hatchery and wild Summer-Run Chinook passing over Lower Granite Dam numbered around 7,000 including jacks (FPC 2001c). Notably, these numbers are similar to those in 1997, which were followed by two very low years in 1998 and 1999, indicating that the high returns should not be misinterpreted or optimistically viewed as recovery. Indeed, Oregon Department of Fish and Wildlife estimated that in 2000, only 12,000 Spring-Run and 900 Summer-Run were wild. (ODFW 2001b). In 2001, the wild Snake River Spring-Run Chinook return was estimated at 67,800 adults, and wild Snake River Summer-Run Chinook numbered around 2,600 adults. (ODFW/WDFW 2002). Estimates for the 2002 returns are lower. (*Id.*). Indeed to date (April 22nd), only 250 total Spring-Run Snake River Chinook have passed over Lower Granite Dam (it is uncertain as to what percentage is wild), as compared to 14,215 this time last year. (FPC 2001e, FPC 2002).

In a study updated in 2001 by Trout Unlimited, the wild returns in 2000 were lower than in past years, and it was predicted that the Spring- and Summer-Run Snake River Chinook would be extinct as early as 2007 in systems such as Marsh Creek and Imnaha River, and as late as 2033 for the most persistent stocks such as the Poverty River. (Oosterhout and Mundy 2001). Indeed, populations fail to replace themselves 78% of the time. (*Id.*). Across seven populations, the average of the median date for functional extinction was 2016. (*Id.*). This date may have been accelerated by the power emergency declared last year by the BPA. As a result of the drought and power emergency, the 2001 yearling migrant survival rates for Spring- and Summer-Run Chinook were at record lows, reaching as low as 20% in May. (FPC 2001a). These poor survival rates are further indication that future returns will be quite lower than the recent highs and that the Chinook are not on the road to recovery.

6. WILD SNAKE RIVER FALL RUN CHINOOK

The Snake River Fall Chinook have also been studied thoroughly by the federal government, states, and independent reviewers. (Waples *et al.* 1991; 57 Fed. Reg. 14653, April 22, 1992; WDFW 1992; 63 Fed. Reg. 11482, Mar. 9, 1998; IDFG 1998; Myers 1998; 63 Fed. Reg. 1807, Jan. 12, 1998; WCChSBRT 1999). It was in the later reviews that the Deschutes River population was included in the Snake River Fall-Run Chinook species. Populations in the John Day, Umatilla and Walla Walla Rivers are thought to be part of the species, but are presently extinct. Similar to the Spring- and Summer-Run Chinook, the Fall-Run Chinook are most impacted by the operation of the dams on the Snake and Columbia Rivers.

The inclusion of the Deschutes River population does not insure the future survival of the species in part because the Deschutes River population is also impeded by Bonneville and the Dalles Dams. In 1998, the Snake River Fall Chinook population was expected to average 500 adults every year, while the Deschutes population averaged 6,000 adults, according to a 1998 report. (Myers *et al.* 1998). While the Snake River stocks appear to meet such hopeless expectations, the Deschutes River stocks have plunged below their discouraging expectations. Combined hatchery and wild Fall-Run Chinook passage over Lower Granite Dam in 2000 was estimated around 10,000 adults, including jacks. (FPC 2001c). Of that 10,000, the Oregon Department of Fish and Wildlife estimated that 857 were wild Fall-Run Chinook, and only 1,900 wild Snake River Fall-Run Chinook actually entered the basin. (ODFW 2001b; ODFW/WDFW 2001). Similarly in 2000, the Deschutes River population numbered a mere 4,400 wild Fall-Run Chinook, the lowest since 1992. (ODFW/WDFW 2001).

The trend of the Snake River Fall Chinook is petering on the brink and declining in the Deschutes River. Even the best optimist would be hard pressed to admit the wild Snake River Fall Chinook are on the road to recovery. In reality, the trends are hard evidence of their continued short road to extirpation.

B. Steelhead

1. Wild Lower Columbia River Steelhead

Lower Columbia River Steelhead total abundance has been declining except for non-native stocks in the Lower Willamette and Clackamas Rivers and Toutle River stocks, which are recovering from major habitat destruction and are still at low abundance levels. (Busby *et al.* 1996). NMFS concluded that these fish are likely to become endangered in the foreseeable future. (*Id.*). The BRT "had substantial concern that the majority of natural steelhead populations in this ESU...may not be self-sustaining...."(*Id.*).

NMFS has identified 36 distinct runs within the geographic distribution of the wild Lower Columbia River Steelhead. (FCRPS 2000). In the 2000 Biological Opinion, NMFS noted that a number of smaller tributaries that historically supported steelhead are currently void of any wild Lower Columbia River Steelhead. (*Id.*). Up to 80% of the natural spawners are thought to be of hatchery origin, although the exact percentage ranges between 0% to 92% based on the individual stream or tributary. (*Id.*).

2. Wild Upper Columbia River Steelhead

Upper Columbia River Steelhead total abundance has been relatively stable or increasing, however, natural stocks are failing to replace themselves (Busby *et al.* 1996). In 2000, an estimated 53,000 wild upriver steelhead passed over Bonneville Dam, excluding wild Snake River Steelhead passing over Lower Granite Dam. (ODFW/WDFW 2001). However, only 1,700 wild steelhead passed over Wells Dam. (FPC 2001d). Returns in 2001 are expected to be within this range. (ODFW/WDFW 2001). Interestingly, the wild adult returns constituted only 27% of the total steelhead over Wells Dam; in other words, there is a significant hatchery influence on this stock, and indeed many of the natural spawners are of hatchery origin. (FPC 2001d). As a consequence NMFS estimate the probability of extinction ranging between 28-100%. (FCRPS 2000) (internal citations omitted).

3. Wild Mid-Columbia River Steelhead

Mid-Columbia River Steelhead total abundance has increased recently but the majority of natural stocks have been declining. NMFS expresses particular concern for the winter-run and Yakima River components of this species. (Busby *et al.* 1996). The ODFW and WDFW description of population trends for the Upper Columbia River Steelhead included the Mid-Columbia River component. Because of the high stray rate into the Deschutes River, NMFS estimates that 60-80% of the natural spawners of this species are in fact hatchery strays. (FCRPS 2000). Furthermore, the hatchery strays represent a spectrum of different species and are likely resulting in significant damage to the genetic and ecological integrity of the wild Mid-Columbia River Steelhead species.

(*Id.*). NMFS concludes that the John Day River is most likely the largest native, naturally spawning stock of steelhead in the species. (*Id.*).

4. WILD UPPER WILLAMETTE RIVER STEELHEAD

Wild Upper Willamette River Steelhead have been declining since 1971 while exhibiting large fluctuations in abundance. (WCSBRT 1999). The WCSBRT was "unanimous" in concluding that these fish are likely to become endangered in the foreseeable future and were "concerned about the universally declining trends in abundance in the relatively small-to-moderate sized runs of winter steelhead in this ESU...." (*Id.*).

Generally, however, any population trend data is difficult due to a lack of abundance data prior to the 1960s. (NWPPC 2001a). One of the major wild populations in the South Santiam River is facing significant decline due to the Green Peter Dam. The runs have been variable between 5,000 and 20,000 spawners, however these include hatchery fish counts. (*Id.*). Ten year averages separating out late-run winter steelhead returning over Willamette Falls show a recent bounce, but are greatly depressed relative to historical numbers. (Personal Communication, Foster 2001).

5. WILD SNAKE RIVER STEELHEAD

Snake River Steelhead have been the subject of two NMFS status reviews, Busby *et. al.* 1996 and WCSBRT 1997. (*See also* 61 Fed. Reg. 56138, Aug. 9, 1996; 62 Fed. Reg. 43937, Aug. 18, 1997). At the time of the status reviews, the average escapement above the Lower Granite Dam was 9,400, apparently around 10% of historical levels based on limited data. (62 Fed. Reg. 43950, Aug. 18, 1997). The 1997 status review lowered the average to 8,900 wild steelhead, and estimated that the carrying capacity is less than 40% satisfied. (WCSBRT 1997). Interestingly, the status review notes that the wild steelhead are declining at a more rapid rate (approximately 14%) than their hatchery born counterparts, and that the decline has been more pronounced in the 1990's. (*Id.*). Based on those trends, NMFS determined that the wild Snake River Steelhead will likely become extinct in the near future. (*Id.*).

In the five years since the last status review, the wild Snake River Steelhead have continued to oscillate in abundance, staying within their 25 year historical range. From 1997 to 2001, the five year average of wild adults over Lower Granite Dam is around 18,500. (FPC 2001b; FPC 2001c). The higher average is significantly skewed by the 2000 and 2001 record high years. Notably, these numbers might also be inflated as Idaho Fish and Game has begun releasing hatchery fish without any fin clips, thereby giving the appearance of wild fish. As of April 22, 2002, 2,700 wild Snake River Steelhead have passed over Lower Granite Dam as compared to 5,172 wild Snake River Steelhead this period during last year's extreme drought. (FPC 2001e; FPC 2002). These reduced passage numbers indicate that the 2000 and 2001 years may be anomalies.

C. Coho

1. Wild Southern Oregon/Northern California Coast Coho

In 1995, NMFS completed a status review for all Coho Salmon along the West Coast. In that status review and subsequent Federal Register notices, NMFS determined, based on the best available science and information at the time, that the coho between Cape Blanco, Oregon and Punta Gorda, California, referred to as the Southern Oregon/Northern California Coho (SONCCC), warranted protection as a threatened species under the ESA. (Weitkamp *et al.* 1995; 60 Fed. Reg. 38011, 38020 (July 25, 1995); 62 Fed. Reg. 24588 (May 6, 1997)). Those reports documented significant decline, by as much as 94% in some parts of California. The causes of the decline are similar to those affecting the Oregon Coast Coho, and are described in more detail below and in the Oregon Coast Coho petition.

Updates of the status of this species occurred in 1996, 1997 and for the California portion in 2001. The updates did not alter the conclusions of the original status review and in fact reinforced those conclusions with new data. (NMFS 1996; WCCSBRT 1997; SFSC 2001). In particular, the 1997 update and the 2001 update provide new information on the presence of SONCCC in particular streams along the coast and the presence of hatchery fish in streams and on spawning grounds which likely resulted in overestimations of escapement and productivity trend data in earlier status reviews. All of the updates indicate that the data fluctuate widely over time and that there is still a significant lack of information on the SONCCC.

Both Oregon and California are also in possession of recent data reinforcing the declining trends of SONCCC. In Oregon, Elk Creek and the Rogue River basin continue to have low numbers of wild coho returning and spawning. (Jacobs 2001). Although estimates for the 2001 spawning season in Elk Creek show higher numbers of coho, made up of mostly wild coho on spawning grounds (ODFW 2001a), and the 2000 estimates in the Rogue River basin reflect higher number of coho (although 50% were considered hatchery), these higher returns are likely anomalies. The jack counts in 2002, often used to estimate the returns the following year, are significantly depressed. (Newport News-Times 2002; PFMC 2002). Additionally, in California, the Department of Fish and Game (CDFG) is near completion of a two year status review of the state's coho populations (including SONCCC coho) that were petitioned for listing under the California Endangered Species Act. Although the data collected is not yet generally available to the public, personal communication with the CDFG indicated that the populations are still in decline and the causes of the decline identified in the federal listing have not been rectified. Our understanding is that the information collected by CDFG is being forwarded to NMFS by April, 2002.

D. Chum

1. Wild Hood Canal Summer-Run Chum

The Hood Canal Summer Run Chum was reviewed in a 1997 NMFS status review of Pacific Coast Chum salmon. (Johnson *et al.* 1997). In that status review, its update, and subsequent Federal Register notices, NMFS determined that based on the best available science and information at the time, the Hood Canal Summer Run Chum was in danger of becoming extinct in the near future. (Johnson *et al.* 1997; 63 Fed. Reg. 11774, Mar. 10, 1998; 64 Fed. Reg. 14508, Mar. 25, 1999; NMFS 1999). The explanation of the trend data is explained in more detail in those documents. Since 1999, the Washington Department of Fish and Wildlife (WDFW) has monitored the run size closely and has not noted a significant increase in Hood Canal Summer-Run Chum, but rather indicates returns consistent with historical variability over the last 25 years. (WDFW 2001).

2. Wild Columbia River Chum

The Columbia River Chum was one of the subjects of a 1997 NMFS status review of Pacific Coast Chum salmon. (Johnson *et al.* 1997). In that status review, its update, and subsequent Federal Register notices, NMFS determined, based on the best available science and information at the time, that the chum in the Columbia River warranted protection as a threatened species under the ESA. (Johnson *et al.* 1997; 63 Fed. Reg. 11774, Mar. 10, 1998; 64 Fed. Reg. 14508, Mar. 25, 1999; NMFS 1999). Those reports indicated a significant decline of Columbia River Chum and the Washington Department of Fish and Game (WDFW) estimates that the current run size is less than 3% of the historical values. (*Id.*; WDFW 2001).

More recently however, there have been two important sources of information on the status of Columbia River Chum. The first is the Fish Passage Center data which indicates that on average, since 1992, 24 chum pass over Bonneville Dam each year, although the data do not distinguish between hatchery and wild chum. (FPC 2001f). There is no data however for the Lower Columbia River below Bonneville Dam, which is where the chum mainly return.

Indeed, the most recent data available on the status of Columbia River Chum is from the Bonneville Power Administration and the Federal Caucus. For instance, the Federal Caucus reported that there is no longer any sport or commercial fishery on Columbia River chum, although they are taken incidentally through gillnet fisheries. (Federal Caucus 2000). On the other hand, a recent proposal submitted to the Bonneville Power Administration indicated that on average only 140 chum spawn in Hardy Creek and 217 in Hamilton Creek and an estimated 3,000 chum steadily return to the entire Columbia River. (BPA 2001). Unfortunately, that same proposal noted that in 1999, Gorley Creek, one of the major spawning channels for Columbia River Chum (approximately 25% of chum spawn there) was destroyed by high flows and has not yet

been repaired (the proposal was for the creation of another artificial spawning channel, among other supplementation plans). (*Id.*). Spawning ground is also affected by the operation of Bonneville Dam. In 2001, Bonneville Dam was unable to keep enough water over the Ives Island spawning area of the Columbia as required by the 2000 Federal Columbia River Power System ("FCRPS") Biological Opinion ("Biological Opinion"). (FCRPS 2000; FPC 2001a; SOS 2002).

IV. ON-GOING THREATS

A. Chinook

1. WILD UPPER WILLAMETTE SPRING CHINOOK

In 1998 the BRT recognized that "commercial and recreational harvests are high relative to apparent productivity of natural populations." (Myers *et al.* 1998). Hooking mortality form sport fisheries and mortality in commercial fisheries threaten the recovery of wild Upper Willamette Spring Chinook.

Dams constructed from 1952-1968 on all major east-side tributaries upstream from Willamette Falls block over 400 stream miles including at least half of the important spawning or rearing areas for Spring Chinook. (*Id.*). Dam passage, especially over Willamette Falls, Detroit Dam, Dexter and Fall Creek Dams, Couger Dam, and Dorena and Cottage Grove Dams, flow, and temperature effects also reduce productivity of Spring Chinook populations in all remaining natural spawning areas including the Clackamas, McKenzie, and North Santiam rivers.

The Willamette Spring Chinook are subject to intense ocean fisheries, including in-river sport and commercial fisheries (NWPPC 2001a). The logging, agriculture, ocean harvest, dam blockage, and other habitat impacts are thought to be the cause for the extinction of wild Spring Chinook in the Calapooia, Molalla and Pudding Rivers. (*Id.*).

ODFW explicitly recognize the detrimental impacts of hatchery fish on wild populations by utilizing techniques to minimize the overlap in range of these fish. An estimated 85-95% of current spring chinook returns to the Willamette Basin are fish that were spawned, reared, and released from hatcheries. (ODFW 2001c) .

Threats related to disease and predation have not been markedly reduced from those described in the NMFS' status review. For more general information on the impacts to the Willamette Basin, please see IV.B.4.

2. WILD LOWER COLUMBIA RIVER CHINOOK

Chinook salmon in the lower Columbia have been strongly affected by losses and alterations of freshwater habitat. The initial status review indicates that timber harvest and its associated increase in sedimentation peaked in the 1930s. However, the

Tillamook and Clatsop state forest management plans, approved in 2000, forecast greater harvest on the state forest lands in this ESU than have occurred in the past 40 years. (ODF 2001).

Hatchery fish have posed and continue to threaten these fish. Nearly **4.5 billion hatchery fish** have been released in this region in the more than 100 years of hatchery impacts on this area. NMFS' status review recognized that "[n]umerically, most of the spring-run chinook salmon spawning naturally in lower Columbia River tributaries on the Washington side are now hatchery strays." (Busby *et al.* 1998). Washington counts indicate that that state's 2001 returns of 17,100 wild fish were overwhelmed by 103,100 hatchery fish.

Dams continue to threaten these fish. Major dams exist on the Columbia, Cowlitz, Lewis, Clackamas, Hood, and Sandy Rivers. These dams, constructed between 1900 and 1958, have all blocked substantial spawning habitat. Their threat to Chinook has not changed since the original listing.

3. WILD PUGET SOUND CHINOOK

Artificial propagation is masking severe downward trends in natural production. Spawning and rearing habitats have been severely degraded and migratory access has been restricted or eliminated. (NMFS 1998). Headwater tributaries have been degraded by forestry practices and mainstem rivers have been impacted by agriculture and urbanization. Loss of estuarine and freshwater wetlands from human endeavors and sedimentation from forest practices are identified problems for this group of fish. (WDFW *et al.* 1993).

NMFS identifies the wide spread use of a single stock of fish in its hatchery practices, the Green River stock, and concludes that this "may reduce the genetic diversity and fitness of naturally spawning populations..."(Busby *et al.* 1998). As mentioned above, hatchery production continues to increase. The hatchery returns in 2002 are expected to be more than 25% greater than 2001 hatchery returns. (PFMC 2002).

Harvest rates on these stocks have been high with ocean exploitation rates on natural stocks averaging 56-59% and total exploitation rates average 68-83% from 1982 through 1989 brood years. Exploitation rates have exceeded 90% on some stocks. (Busby *et al.* 1998).

4. WILD SNAKE RIVER SPRING- AND SUMMER-RUN CHINOOK

The overwhelming conclusion of all of the status reviews and reports is that the Snake River Chinook (Spring-, Summer- and Fall-run) are in precipitous decline due mainly in part to the daming of the Snake and Columbia Rivers. (Matthews and Waples 1991; 56 Fed. Reg. 29542, June 27, 1991; 57 Fed. Reg. 14653, Apr. 22, 1992; WDFW 1993; 59 Fed. Reg. 42529, Aug. 18, 1994; 59 Fed. Reg. 66784, Dec. 28, 1994; IDFG 1998; Myers

et al. 1998). More recent reports have only bolstered this conclusion. (FPC 2001a; Oosterhout and Mundy 2001; ACOE 2002).

The 2000 Biological Opinion for the operation of the Federal Columbia River Power System attempted to address the impact that the hydrosystem has on salmon, especially the Snake River stocks. In order to accomplish that goal, the National Marine Fisheries Service required 199 Reasonable and Prudent Alternatives (RPAs), including spill volume requirements, fish passage improvements, flow requirements, and water quality guidelines. (FCRPS 2000). In the year that the agencies have been operating under the Biological Opinion, they have failed to meet most of the operating requirements necessary to protect the Snake River salmon. In a report recently issued by Save our *Wild* Salmon Coalition, the organization gave the agencies a failing grade, noting that they completely failed to implement 22 Clean Water and dam RPAs, while 14 remain woefully incomplete. (SOS 2002). In a year where the survival of the Snake River Chinook was seriously impeded by the drought, the operation of the hydro system in such complete defiance of the Biological Opinion only exacerbated the potential extinction of the Snake River Chinook. (FPC 2001a).

Much of the spawning habitat was lost by the construction of the dams, and the remainder is affected by farming, logging and mining. (FCRPS 2000). The wild Snake-River Spring- and Summer-Run Chinook are also affected by a strong hatchery influence. (*Id.*).

5. WILD SNAKE RIVER FALL-RUN CHINOOK

The on-going threats that affect the Spring- and Summer-Run Chinook also impact the Fall Run Chinook. For example, the 2000 Biological Opinion concluded that with regards to Snake River Fall-Run Chinook, "the most productive areas of the Snake River basin are now inaccessible or inundated." (FCRPS 2000, at section 4.1.2.4). In terms of downstream migration, low flows are not as problematic as they are with the Snake River Spring- and Summer-Run Chinook and the Steelhead, however the change in water temperature alters migration timing and can result in high mortality rates. (ACOE 2002). Last year, under the operation of the Biological Opinion, the agencies failed to maintain water temperatures at Lower Granite Dam, and failed to study and model reservoir temperatures. (SOS 2002). Without meeting the required RPAs, the continued operation of the dam complexes will, "appreciably reduce the likelihood of both its survival and its recovery." (FCRPS 2000, at section 8.2.1; *see also* IDFG 1998).

Snake River Fall Run Chinook are also affected by water withdrawals, grazing, vegetation management and fishing impacts. (63 Fed. Reg. 11497, Mar. 9, 1998; ODFW 2001b). These impacts continue to impact both the Deschutes River stocks and the Snake River stocks of the species. Additionally, the Deschutes River is known for large temperature fluctuations which impacts redd incubation and fry survival. Habitat degradation is a significant concern along the Deschutes due to increasing development and water withdrawals. (DGWSC 1999). Bank erosion, sediment loading, altering river

flows, exposed spawning habitat and loss of food sources are just some of the impacts of the changing human influence on the Deschutes River. (*Id.*).

The harvest rate on wild Snake River Fall-Run Chinook is roughly 30%, and over 50% are usually killed by the dams. (ODFW/WDFW 2001). There is also a considerable hatchery influence on the Snake River stocks and account for nearly 75% of the spawner escapement over the Lower Granite Dam. (ODFW/WDFW 2001). The presence of hatchery fish on natural production areas results in competition and potentially devastating impacts to the genetic composition of the wild stocks. (WCChSBRT 1999) Although habitat degradation is certainly a factor in the decline of the Fall-Run Chinook, it is not considered the limiting factor in their recovery at least in the Snake River. (IDFG 1998).

6. WILD UPPER COLUMBIA RIVER CHINOOK

The nine federal dams along the Columbia River are the most severe impediment to the survival of Wild Upper Columbia River Chinook, and will continue to restrict the recovery of this species. Chief Joseph Dam remains impassible and blocks most of the historical spawning ground of the Chinook. (FCRPS 2000). More recently, stressful land use through urbanization, irrigation, and grazing continues to degrade the remaining Chinook habitat. (*Id.*).

Locally, on the Wenatchee and Methow subbasins, urbanization, road construction, reduced large woody debris, water channelization and diversion for agriculture and flood control, change in stream flows, and a loss of floodplain have exacerbated an already disturbing loss of habitat both in terms of quality and quantity. Fishery harvest is a concern through incidental harvests, but no directed harvest exists on Wild Upper Columbia River Chinook. (NWPPC 2001c; NWPPC 2001d; NWPPC 2001e).

Hatchery fish remain a threat to the survival of Upper Columbia River Chinook, especially from the Winthrop National Fish Hatchery. (NWPPC 2001e). The presence of hatchery fish has resulted in genetic introgression and high competition for limited habitat. (NWPPC 2001d).

B. Steelhead

1. WILD LOWER COLUMBIA RIVER STEELHEAD

Steelhead abundance of these stocks is being negatively impacted from the loss of spawning and rearing habitat from dams and other blockages. Forestry practices and urbanization continue to present problems for these fish, and the presence of hatchery fish present threats to these stock's genetic integrity. (Busby *et al.* 1996).

Because the Lower Columbia River Steelhead depend heavily on the estuarine environment at the mouth of the Columbia River, changes to the estuary through

urbanization, channel dredging and deepening, and navigation continue to have significant impacts to the species. (*Id.*; NWPPC 2001b). Approximately 20,000 acres of tidal swamp, 10,000 acres of tidal marsh and 3,000 acres of tidal flats have been lost. (NWPPC 2001b).

In the upper stretches of the habitat, logging, dams and hatchery influences (between 50-80% of the natural spawners are of hatchery origin), continue to wreck havoc on the survival of the wild Lower Columbia River Steelhead. (FCRPS 2000; NWPPC 2001b). Additionally, commercial ocean and in-river harvests have considerable dire impact on the hatchery steelhead which results in a measurable incidental mortality of the wild steelhead. (FCRPS 2000; NWPPC 2001b). Particularly troublesome in both the estuary and in the Lower Columbia River, are the high temperatures which can cause fish kills. (NWPPC 2001b).

In the lower stretches of the Willamette River Basin, although the non-native stocks of steelhead are increasing, the native, wild stocks are decreasing due to urbanization from the Portland area and agriculture. (NWPPC 2001b).

2. WILD MIDDLE COLUMBIA RIVER STEELHEAD

Middle Columbia River Steelhead "...face pervasive problems..." (WCSBRT 1999). The WCSBRT, in their review of Middle Columbia River Steelhead conclude that "[e]xtensive habitat blockages, water diversions, altered water flow and temperature regimes, and the resulting loss of spawning and rearing habitat ...have combined to result in a significant threat to its persistence..." (*Id.*). Mainstem Columbia River Dams hamper the migration of these fish. The only substantial habitat blockage occurs at Pelton Dam on the Deschutes River. (NMFS 1996; FCRPS 2000).

Riparian and in-stream conditions have been adversely impacted by agricultural practices, timber harvest, road building and channelization. (Busby *et al.* 1996). Significant water withdrawals in the driest areas of the Pacific Northwest reduce flows and water for rearing. (FCRPS 2000). Grazing due to a heavy influence of agriculture also impacts the riparian habitat, water quality and stream temperatures. (*Id.*).

Current and past hatchery practices threaten the genetic integrity of these steelhead (Busby *et al.* 1996). Up to 80% of the naturally spawning steelhead are of hatchery origin and are generally thought to be strays. (FCRPS 2000). As a consequence, the impact of hatchery fish on the wild Middle Columbia River Steelhead is expected to be considerable. (*Id.*).

Although a relatively minimal impact, the wild Middle Columbia River Steelhead are also subject to a tribal fishery as well as a sport fishery that incidentally impacts the wild steelhead. (ODFW/WDFW 2001).

3. WILD UPPER COLUMBIA RIVER STEELHEAD

Factors negatively affecting steelhead abundance include loss of habitat from dams, instream and riparian habitat degradation from agricultural practices, urbanization, hydroelectric dams, and from genetic risks associated with hatchery production. (Busby *et al.* 1996; FCRPS 2000). The Chief Joseph and Grand Coulee Dams are the major impediment to the recovery of the Wild Upper Columbia River Steelhead. (FCRPS 2000).

There is also a significant hatchery influence on the Wild Upper Columbia River Steelhead and the majority of natural spawners are thought to be of hatchery origin. (FCRPS 2000). Many of the same impediments to the recovery of Wild Upper Columbia River Chinook also negatively impact the Wild Upper Columbia River Steelhead. *See supra* IV.A.6.

4. WILD UPPER WILLAMETTE RIVER STEELHEAD

Factors negatively affecting wild Upper Willamette Steelhead abundance are loss of spawning and rearing habitat from dams and culverts, forestry practices, stream flow and temperature problems, riparian losses and instream habitat problems, agricultural practices, urbanization, fishing pressure, and from genetic risks associated with hatchery production. (Busby *et al.* 1996).

The WCSBRT, in their review of Upper Willamette River Steelhead concluded "that ocean and harvest conditions, combined with greatly reduced freshwater spawning and rearing habitat are, likely have resulted in severe impediments to the maintenance of abundant steelhead populations that are well distributed throughout the basin..." (WCSBRT 1999).

In addition to Willamette Falls, Big Cliff Dam, Foster Dam, Green Peter Dam, Dexter Dam, Dorena Dam and Cougar Dam, all block steelhead passage into prime habitat. (FCRPS 2000; NWPPC 2001a). Indeed, Green Peter Dam may be responsible for the continuing declines of one of the more important wild steelhead populations on the South Santiam River.

Hatchery steelhead account for 5-25% of the natural spawners in the area. (FCRPS 2000; NWPPC 2001a). Habitat alterations, especially from the removal of large woody debris, have caused tangible changes in the life history of the wild Upper Willamette River Steelhead. (*Id.*). Urban sprawl from Portland, Salem and Eugene-Springfield, agricultural growth, and logging in the eastern Coast Range has added to the degradation of the water quality and loss of riparian and wetland habitats. (NWPPC 2001a). The degree of alteration of the Willamette Valley, "is the most altered ecoregion in Oregon, with the most significant natural process – fire and flooding- almost entirely excluded." (NWPPC 2001a, at 27) (internal citations omitted). (*See also* Martin 1998).

5. WILD SNAKE RIVER STEELHEAD

Because of the similarities in migration and rearing, the Snake River Steelhead is affected by many of the same threatening factors as the Snake River Spring- and Summer-Run Chinook. Man-made impediments block the access to the prime spawning ground of the steelhead, especially the Hells Canyon Complex along the Snake River. (FCRPS 2000). Again, the operation of the federally operated hydro system in the Snake and Columbia River in 2001 resulted in significant losses to Snake River Steelhead. Down downstream migration survival was less than 20% (only 10% for the hatchery steelhead), representing one of the lowest survival rates on record. (FPC 2001a).

The Snake River Steelhead are also subject to an instream sport fishery that results in the incidental death of many wild Snake River Steelhead (only hatchery steelhead may be kept). (ODFW/WDFW 2001). A tribal commercial harvest is allowed on the Snake River Steelhead. (*Id. See also* Columbia River Compact Action Notices). Additionally, the habitat of the Snake River Steelhead has been significantly degraded by grazing, mining and dredging. (FCRPS 2000).

Additionally, the Snake River Steelhead are affected by a strong hatchery population which cause deleterious genetic impacts and introgression to the wild Snake River Steelhead. (WCSBRT 1997). Since 1989, hatchery steelhead have made up more than 70% of the steelhead passing over Bonneville Dam (in 1999 it was a mere 68%). (ODFW/WDFW 2001). In the Snake River, hatchery steelhead make up an even greater proportion (average of 86%) of those passing over the dams. (FCRPS 2000). As a consequence of high hatchery influences, NMFS estimated that the Snake River Steelhead would be extinct within the next 100 years. (*Id.*).

C. Coho

1. WILD SOUTHERN OREGON/NORTHERN CALIFORNIA COAST COHO

The four status reviews and four Federal Register notices thoroughly document and explore the numerous human induced causes for the decline of Southern Oregon/Northern California Coho. (Weitkamp *et al.*, 1995; 60 Fed. Reg. 38011 (July 25, 1995); NMFS 1996; WCCSBRT 1997; 62 Fed. Reg. 24588 (May 6, 1997); 62 Fed. Reg. 62741 (Nov. 25, 1997); 64 Fed. Reg. 24049 (May 5, 1999); SFSC 2001). The SONCCC coho are more particularly affected by overharvest, poor habitat, poor ocean conditions and a heavy influence of over a million hatchery released fish, especially in the Oregon portion of the ESU. (*Id.*). California hatcheries mainly used exotic, out of basin, coho for their hatchery programs even though the actual numbers released are lower than those in Oregon. (*Id.*). None of the eight reports indicate that there has been a substantial change in the causes of decline such that a change in the population status is warranted. Further, as the population remains depressed, the causes of decline generally have an exponential impact such that a combination of two or more bad years, for example from

drought and poor ocean conditions, may cause a significant extinction event for the species.

In terms of potential future recovery, there are growing numbers of reports that El Nino, a cyclical ocean condition which has detrimental impacts on salmon populations, will be returning. (NOAA 2002). Additionally, the numerous reports emerging from the Klamath basin crisis all agree on one point: the Southern Oregon/Northern California coho in that region are continuing to decline; the debate instead focuses on the methods for recovery and balancing that recovery against other water users in the area. (BOR 2002a; BOR 2002b; NRC 2002). Other data point to the low number of coho jacks returning to the coast this year, an indicator of future returns. (Newport News-Times 2002; PFMC 2002). These impending impacts suggest that the future recovery of Southern Oregon/Northern California Coast coho is not promising.

State regulatory measures, notable the Oregon Salmon Plan, described in more detail in the Oregon Coast Coho petition, does not address Southern Oregon/Northern California Coast coho. Furthermore, the Oregon Wild Fish Policy is being inconsistently enforced and the Oregon Department of Fish and Wildlife is currently drafting new Native and Hatchery Fish Management Policies. (ODFW 2002). Habitat, watershed and fish passage programs in Oregon are discussed in more detail in the Oregon Coast Coho petition, which concludes that such changes have not resulted in any notable recovery in salmon populations such that currently listed species should be reconsidered.

In California the state has only distributed $2 million in salmon restoration grants, representing less than one-fourth of the money available pursuant to the Memorandum of Understanding between NMFS and California signed in 2000. (MOU 2000). Furthermore, although California has implemented a Coastal Salmon and Watershed Program, there is no current report on the progress of that program or its impact on salmon recovery. In terms of habitat, a recent report by the independent Scientific Review Panel concluded that California Forest Practice Rules do not protect anadromous salmon. (Ligon *et al.* 1999). Consequently, the current regulatory measures still appear woefully inadequate to protect the Southern Oregon/Northern California Coast coho from future endangerment. In terms of hatchery production in California, the four hatcheries in California that produce SONCCC coho are operating at a reduced capacity. (SFSC 2001). However, a joint CDFG/NMFS draft report on hatcheries in California note that those four hatcheries do not have Hatchery Genetic Management Plans (HGMPs) to guide their operation under Section 4(d) of the ESA. (CDFG 2001).

D. Chum

1. Wild Hood River Summer-Run Chum

Based on the status review, NMFS has identified habitat loss as one of the leading factors in the decline of Hood River Summer-Run Chum. (Johnson *et al.* 1997; 63 Fed. Reg. 11774, Mar. 10, 1998; NMFS 1999). Specifically, in stream flows and passage and estuarine and in stream habitat degradation, such as disturbances to gravel large woody

debris and urbanization, particularly impacted Hood River Summer Run Chum. (*Id.*). Historically, overharvest and artificial production impacted the Hood River Summer Run Chum, but currently are limited to incidental impacts. (*Id.*; WDFW 2000). More recently, climate change and its effect on ocean productivity and stream flows, is having a greater impact on the future recovery efforts of Hood Canal Summer-Run Chum. (WDFW 2000).

Interesting to note, the State of Washington, together with the tribal co-managers, implemented protective measures for the chum as early as 1992. More recently, in 2000, the State of Washington and Point No Point Tribes created a joint recovery plan. (WDFW 2000). Although the recovery efforts are aimed at improving habitat, reducing harvest impacts (incidental and otherwise), and reforming the hatchery practices affecting the chum, these measures have resulted in only slight to moderate increases in the Hood Canal Summer-Run escapement rates. (WDFW 2001). Although the latest efforts are still in their initial stages such that their success or failure is impossible to evaluate, the modest recovery efforts implemented in 1992 resulted in very small increased returns as compared to historical levels. (*Id.*). The large returns in the mid 1990's stand out as anomalies and in fact serve to highlight the precarious status of the stocks. (*Id.*). Indeed today if the stocks were to see the same declines as they did from 1996 to 1997, Hood Canal Summer-Run Chum would be extinct. These best available data merely serve to highlight the continuing need to protect wild Hood Canal Summer-Run Chum as a threatened species under the ESA.

2. WILD COLUMBIA RIVER CHUM

The status review, its updates, and the corresponding Federal Register notices all provide indications of the historical and continuing threat to the survival of Columbia River Chum. (Johnson *et al.* 1997; 63 Fed. Reg. 11774, Mar. 10, 1998; 64 Fed. Reg. 14508, Mar. 25, 1999; NMFS 1999; 65 Fed. Reg. 7764, Feb. 16, 2000). Additional recent reaffirmation of the threats come directly from the Bonneville Power Administration, the Federal Caucus and the Washington Department of Fish and Game. (Federal Caucus 2000; BPA 2001; Federal Caucus 2001; WDFW 2001). Specifically, the reports highlight the presence of dams and other in river migration blockages, as well as significant habitat destruction as the two largest sources of the decline of the chum. (Johnson *et al.* 1997). Hatcheries may have also influenced the decline, although currently the only hatchery operation is a conservation hatchery geared towards sustaining the Columbia River stock in Grays River. (Johnson *et al.* 1997; WDFW 2001). WDFW believes that the hatchery program is necessary because only two self-sustaining populations remain and there is a high risk of a catastrophic event that could cause their extinction. (WDFW 2001). The concern is not unfounded.

In the FCRPS 2000 Biological Opinion, the government concluded that the biological requirements of the Columbia River Chum were not being met and that, "continuing the proposed action for the long term, coupled with the current prospects for survival and recovery across the range and life-cycle of the ESU, is likely to appreciably reduce the likelihood of both its survival and its recovery." (FCRPS 2000 at 8-23). In other words,

the catastrophic event is already happening – the operation of the hydropower dams on the Columbia River. In 2001, BPA declared a power emergency that disregarded the biological requirements for chum survival, at the very time when they needed flows most to help maintain redds and begin the migration to the ocean. (Federal Caucus 2001). Additionally, as mentioned previously, habitat destruction continues in Washington and the WDFW has taken a less than aggressive approach to recovering Columbia River chum. (BPA 2001; WDFW 2001).

With the continuing destructive operation of the hydro system on the Columbia River, the lack of any increases in returns to Chum salmon, despite their 1999 listing as threatened, and the on going threat to their habitat, the wild Columbia River Chum deserve federal protection under the Endangered Species Act. Indeed, these continued threats indicate that not only will the Columbia River Chum likely become endangered in the near future, but will likely become extinct. Therefore, Petitioners request that the wild Columbia River Chum be listed as endangered pursuant to the ESA.

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